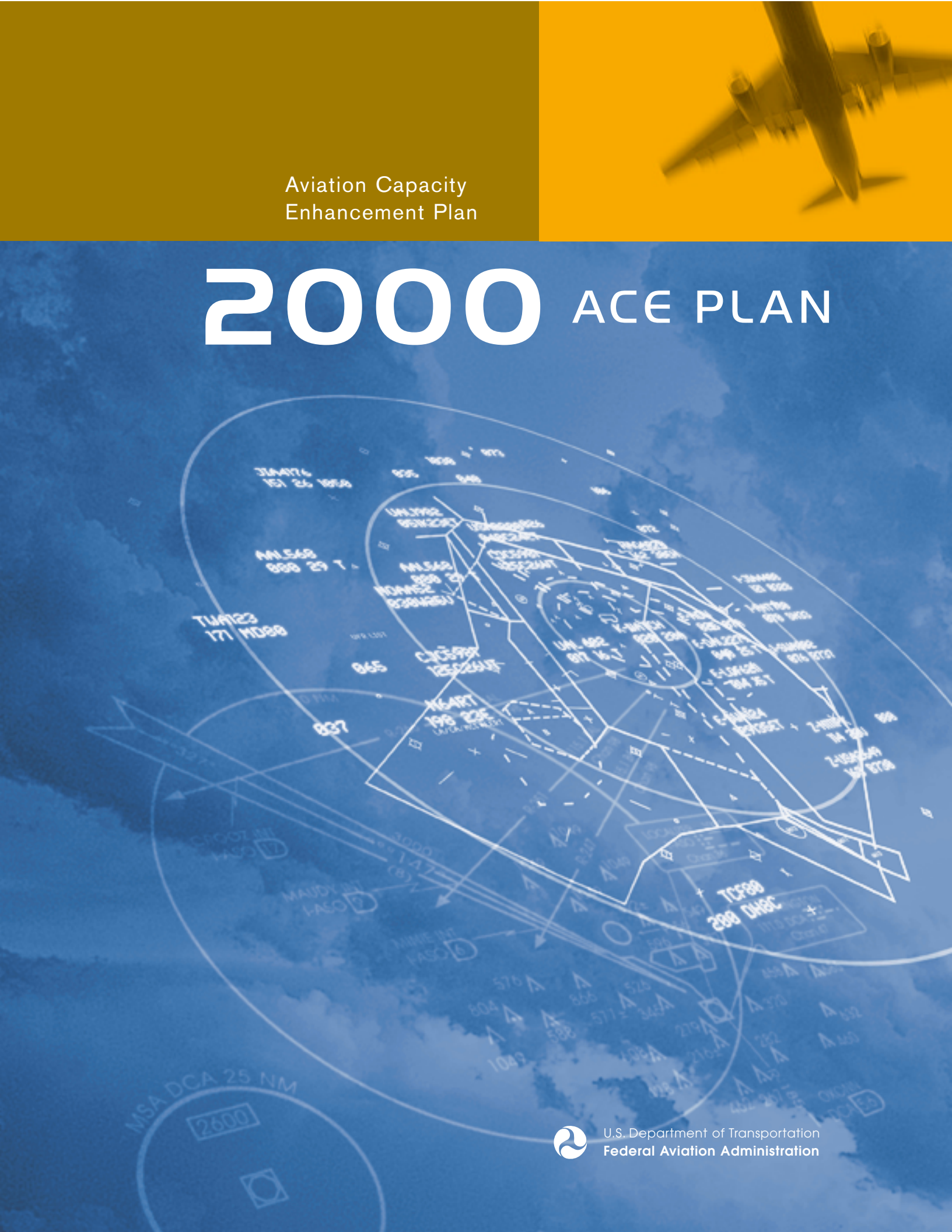
Aviation Capacity
Enhancement Plan

2000 ACE PLAN



U.S. Department of Transportation
Federal Aviation Administration

2000

AVIATION CAPACITY ENHANCEMENT PLAN

FEDERAL AVIATION ADMINISTRATION
OFFICE OF SYSTEM CAPACITY

DECEMBER 2000

Prepared jointly by the Federal Aviation Administration
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PREFACE

The Aviation Capacity Enhancement (ACE) Plan is published annually by the Federal Aviation Administration's (FAA) Office of System Capacity (ASC). The ACE Plan is a reference guide to new and on-going Agency initiatives to expand airport and airspace capacity. The ACE Plan is comprised of the following chapters:

Chapter 1 — Regional Jets Reshape A Dynamic Industry
Provides an overview of the rapid growth of regional jets and their impact on the National Airspace System, including aircraft performance comparisons, a historic perspective on changes in the aviation industry and a summary of their anticipated impact on airport design.

Chapter 2 — Elements of the National Airspace System
Describes the fundamental elements of the National Airspace System, includes information on airports, air traffic facilities and equipment, navigational aids, and airways.

Chapter 3 — National Airspace System Activity and Sources of Demand
Contains current activity and demand in the National Airspace System and provides estimates of future demand.

Chapter 4 — Capacity of the National Airspace System
Discusses the factors affecting airspace and airport capacity.

Chapter 5 — Improving System Performance
Provides an overview of the FAA's strategies to improve system performance.

Chapter 6 — Airport Development
Contains an overview of airport development, including ownership, governance, and an update on construction projects.

Chapter 7 — Airspace Design
Summarizes the FAA's efforts to improve airspace capacity by redesigning airspace.

Chapter 8 — Operational Procedures
Offers an update on air traffic control procedures, part of the ongoing effort to increase capacity with little or no investment in airport infrastructure or equipment.

Chapter 9 — National Airspace System Modernization
Contains an overview of the FAA's progress towards modernization of the National Airspace System through 2015.

The chapters are supported by additional information on aviation activity and construction projects at the 100 busiest U.S. airports in a series of appendices:

Appendix A
Provides historical, current, and forecast information on aircraft operations and passenger enplanements.

Appendix B
Summarizes the status of the recommendations of completed Capacity Enhancement Plans.

Appendix C
Summarizes runway construction projects that are proposed or planned for 2006 and beyond.

Appendix D
Presents airport layouts highlighting current capacity enhancement projects. This year a new feature includes traffic activity graphs as part of the layouts.

Appendix E
Defines acronyms used in the ACE Plan.

Appendix F
Lists the references used to prepare the ACE Plan and credits for materials from FAA and non-FAA sources.

INTRODUCTION

INTRODUCTION

The image on the cover of the ACE Plan captures the depth and complexity of operating in the National Airspace System (NAS). Two perspectives are depicted: an air traffic control radar scope that shows several aircraft in a controller's airspace, and the approach plate that a pilot would use when making an instrument approach to an airport within Washington Center airspace. Each layer of responsibility affects the other—controllers and pilots must work together for the air traffic control system to work.

Significant Developments

During 1999, traffic continued to grow steadily; enplanements reached 659.9 million and operations increased to 68 million. The FAA forecasts continued growth, with enplanements passing 1 billion and operations climbing to 86.9 million by 2011, increasing the need for capacity enhancements.

In April 2000, Congress passed the Wendell H. Ford Aviation and Reform Act for the 21st Century, known as AIR-21. This legislation provides the FAA with a $10 billion increase in funding over the next three years, with most of the additional funding going towards radar modernization and airport construction projects. AIR-21 also phases out slot controls at LaGuardia, Kennedy, and Chicago O'Hare airports.

Another important development was the rapid growth in regional jet operations. As the changeover of the regional airlines' fleets from turboprops to jets continues, the distribution of traffic in the NAS is also changing, affecting both airspace and airport capacity.

Capacity Enhancements Continue

Building new airports is the most direct means of improving capacity, but the FAA also works to use the existing infrastructure more efficiently. The Office of System Capacity coordinates research on improvements in runways and taxiways, navigational aids, and operational procedures. Since the start of the Airport Capacity Design Team program in 1985, 47 Airport Capacity Team studies have been completed.

Airport construction projects, depending upon the type of project, may take a decade or more to complete. Projects recently completed at the 100 busiest airports include runway extensions at Newark International and Memphis International and a new runway at Phoenix Sky Harbor International.

Delays In Perspective

In 1999, some 374,116 flights were delayed 15 minutes or more, an increase of 22 percent from 1998. A large majority of these delays were attributed to weather and a smaller but significant percentage to volume. Unfortunately, delays continued to increase through the first nine months of 2000. Figure I-1 puts these delays into perspective, showing how they are concentrated at a relatively small number of airports. Ten large-hub airports accounted for 64 percent of all delays in 1999, but only 31 percent of enplanements.

Figure I-1

Airports Ranked by Number of Delays

Rank	ID	Total Ops	Total Delays	Delays per 1,000 Ops	Average Time (Min)	CY99 Enplanements	% of Total Enplanements
1	ORD	897,290	49,202	54.83	55.83	34,050,083	5%
2	EWR	463,000	36,553	78.94	49.98	16,927,048	3%
3	ATL	909,911	32,737	35.97	37.67	38,136,866	6%
4	LGA	368,311	28,474	77.3	39.95	11,968,030	2%
5	SFO	440,032	21,187	48.14	52.96	19,249,988	3%
6	DFW	867,338	16,731	19.29	38.7	27,990,212	4%
7	BOS	502,164	14,989	29.84	43.96	13,183,145	2%
8	PHL	480,279	14,516	30.22	45.25	13,183,145	2%
9	JFK	355,677	13,547	38.08	36.44	11,762,140	2%
10	PHX	563,843	11,919	21.13	27.11	16,781,835	3%
Total ➤		**5,847,845**	**239,855**			**205,424,530**	**31%**
Total Average ➤				**43.38**	**42.79**		
Total All Airports ➤			**374,116**			**659,923,639**	

Sources: Federal Aviation Administration, Top 10 Facilities by Total Delays, CY99
Federal Aviation Administration, APO-130. Enplanements for all airports, CY99

Figure I-2 summarizes planned runway projects at the same ten airports from 2000 through 2005. In addition to the completed projects mentioned above, future plans include new runways at Hartsfield Atlanta International, Dallas/Fort Worth International and a proposed runway at Boston Logan International. Runway extensions are planned at Dallas/Fort Worth International and Phoenix Sky Harbor International.

Figure I-2

Runway Projects at the Most Delayed Airports

Rank	ID	Planned Runway Projects through 2005	Estimated Completion
1	ORD	*No Projects Planned*	*N/A*
2	EWR	Runway 4L/22R Extension	2000
3	ATL	New Runway 9S/27S	2005
4	LGA	*No Projects Planned*	*N/A*
5	SFO	*No Projects Planned*	*N/A*
6	DFW	Runway 18R/36L Extension	2002
		Runway 17C/35C Extension	2003
		Runway 18L/36R Extension	2004
		New Runway 18R/36L	2005
7	BOS	New Runway 14/32	2005
8	PHL	*No Projects Planned*	*N/A*
9	JFK	*No Projects Planned*	*N/A*
10	PHX	New Runway 7/25	2000
		Runway 8L/26R Extension	2002

Source: Federal Aviation Administration, APP-410

Improving System Performance

Beginning in the fall of 1999 and continuing through 2000, the FAA has taken significant steps to reduce delays through the Spring/Summer Plan. A joint FAA/industry effort, the Spring/Summer Plan was designed to mitigate the effects of severe weather on aircraft operations through a re-commitment to collaboration between the FAA, the airlines, and other NAS users.

The FAA continued its efforts to reduce delays when in May 2000 a group of NAS users, FAA managers, and union representatives met to discuss the National Airspace Redesign. Participants suggested that the FAA concentrate on short-term actions to improve performance at a number of system choke points. The FAA embraced these suggestions and quickly prepared a national plan to relieve the congestion at those choke points. The first action items are scheduled to be implemented or fully tested by the end of October 2000.

Milestones in NAS Modernization

NAS Modernization, the FAA's long-term plan to meet the growing demand for air traffic services had several significant accomplishments in the past year:

- The FAA dedicated the final Display System Replacement (DSR) on July 14, 2000 at the Washington Air Route Traffic Control Center (ARTCC). The first major component of the FAA's modernization of the nation's en route air traffic control system infrastructure, the DSR program was completed on time and within budget, and the new equipment is now operational at all 20 continental ARTCCs.
- The first HOST and Oceanic Computer System Replacement (HOCSR), which replaced antiquated computers, was dedicated at the New York ARTCC in March 1999. Subsequent installations proceeded rapidly and by January 2000 the new systems had been installed at all 20 continental ARTCCs.
- The five technologies of Free Flight Phase 1 were successfully deployed at test sites around the country and are bringing real and measurable improvements to air traffic control operations:
  - The User Request Evaluation Tool (URET) has increased the number of direct routes at Indianapolis and Memphis ARTCCs by approximately 30 percent
  - The Traffic Management Advisor has increased the arrival rate at Dallas/Fort Worth Airport by five percent
  - The Passive Final Approach Spacing Tool has enabled controllers to add one or two arrivals per rush at Dallas/Fort Worth Airport
  - The Surface Movement Advisor has helped airlines avoid three-to-five diversions per week at Detroit Metropolitan Airport
  - Collaborative Decision Making has helped airlines avoid over 10 million minutes of delay

Summary

The challenges posed by the continuing growth of traffic and the changes in the distribution of that traffic are real. The FAA is dedicated to meeting those challenges and the needs of the aviation community. The FAA's goal is to enhance system capacity while ensuring safety in aviation. The ACE Plan highlights the FAA's new and on-going initiatives to reach those goals.

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